THE INSTITUTION OF CIVIL ENGINEERS



PART II

ENGINEERING DIVISIONS

AIRPORT · MARITIME · RAILWAY · ROAD

VOLUME 2 1953

LONDON:

Published by The Institution,
GREAT GEORGE STREET, S.W.1

The rights of Publication and of Translation are reserved

THE INSTITUTION OF

10 10 10 10 10 10

620.6 JuSp

DART II

OFFICE OF STREET

THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER.

AMERICA LINE

10000702

LET ATTENDED THE PERSON NAMED IN

PROCEEDINGS OF

THE INSTITUTION OF CIVIL ENGINEERS

Part II, Vol. 2, 1953

February, June, and October, 1953

CONTENTS

PAGE
THE ORGANIZATION OF AIRPORT CONSTRUCTION." E. A. Palmer (with discussion)
SOME DESIGNS FOR FLEXIBLE FENDERS." D. H. Little (with oral discussion) 42
Some Major Problems in Railway Civil Engineering Maintenance." A. H. Cantrell (with oral discussion)
THE PERFORMANCE OF SOME ASPHALT AND COATED-MACADAM MIXING PLANT." D. B. Waters
AERODROME RUNWAY CONSTRUCTION IN NIGERIA." Alexander McDonald . 170
SEA DEFENCE WORK AT SILLOTH, CUMBERLAND." G. O. Lockwood 188
Post-War Coast Protection Works along the South-East Coast of England, which have been Undertaken by the Kent River Board as Part of their Functions in Connexion with Land Drainage." G. Cubley Crowther
rrespondence on Road Paper No. 37 (Gifford) 209
GIL STABILITY PROBLEMS IN ROAD ENGINEERING." Rudolph Glossop and G. C. Wilson (with oral and written discussion)
THE RECONCILIATION OF CIVIL ENGINEERING PROBLEMS WITH INTERNATIONAL STANDARDS IN THE SITING AND PLANNING OF AIRPORTS." A. Shaw Maclaren (with oral and written discussion)
THE RECONSTRUCTION OF GREENWELL'S NO. 1 DRY DOCK AND ANCILLARY WORKS AT SUNDERLAND.'' Harry Ridehalgh (with oral and written discussion)
The Design of Structures in Relation to Maintenance and Inspection." Frank Turton and N. S. Cox (with oral discussion)
OME AIDS TO TRAFFIC FLOW." R. A. B. Smith (with discussion) 416
IETHODS OF SOIL STABILIZATION AND THEIR APPLICATION TO THE CONSTRUCTION OF AIRFIELD PAVEMENTS." D. L. Maclean and P. J. M. Robinson (with oral discussion)
POST-WAR COAST PROTECTION WORKS AT FLEETWOOD, LANCASHIRE, 1946–1950." William Melville
OAST PROTECTION: SOME RECENT WORKS ON THE EAST COAST, 1942–1952." Jack Duvivier
respondence on Maritime Paper No. 21 (Little)
respondence on Railway Paper No. 47 (Cantrell)

TAU
"PORT OF LONDON AUTHORITY ENGINEERING WORKS, 1952." G. A. Wilson (with discussion)
"THE TREND OF DEVELOPMENT IN THE DESIGN AND EQUIPMENT OF UNDER- GROUND RAILWAYS." D. H. Coombs and G. J. Willson (with discussion) . 60
"Factors Affecting the Riding Quality of Machine-Laid Concrete Roads," R. H. H. Kirkham (with discussion)
"THE RECONSTRUCTION OF FRENCH RAILWAYS." René Miot (Summary of Lecture)
"The Design of Motorways." T. E. Hutton (with discussion and correspondence)
"THE DESIGN AND EQUIPMENT OF MODERN MARSHALLING YARDS." R. E. Sadler (with discussion and correspondence)
"Echo Sounding in Relation to Modern Harbour and Coastal Surveys." Commander D. H. Maemillan (Summary of Lecture)
Correspondence on Paper No. 5897 (Crowther)
Correspondence on Railway Paper No. 48 (Cox)
Correspondence on Airport Paper No. 23 (Maclean and Robinson) 81
Personnel of Engineering Divisional Boards for Session 1953-54

NAME AND SUBJECT INDEXES

FOR

Proceedings, Part II, Vol. 2, 1953. February, June, and October, 1953.

NAME INDEX

FOR

Proceedings, Part II, Vol. 2, 1953. February, June, and October, 1953.

AUTHOR INDEX

- Cantrell, A. H. Some Major Problems in Railway Civil Engineering Maintenance. 106 (Feb.); Discussion, 127 (Feb.); Correspondence, 545 (June).
- Coombs, D. H., and G. J. Willson. The Trend of Development in the Design and Equipment of Underground Railways. 605 (Oct.); Discussion, 641 (Oct.).
- Cox, N. S. See Turton and Cox.
- Crowther, G. Cubley. Post-War Coast Protection Works along the South-East Coast of England, which have been Undertaken by the Kent River Board as Part of their Functions in Connexion with Land Drainage. 196 (Feb.); Correspondence, 813 (Oct.); Corrigendum, 549 (June).
- Duvivier, Jack. Coast Protection: Some Recent Works on the East Coast, 1942-52. 510 (June).
- Glossop, Rudolph, and G. C. Wilson. Soil Stability Problems in Road Engineering. 219 (June); Discussion, 254 (June); Correspondence, 272 (June).
- Hutton, T. E. The Design of Motorways. 711 (Oct.); Discussion, 737 (Oct.); Correspondence, 753 (Oct.).
- Kirkham, R. H. H. Factors Affecting the Riding Quality of Machine-Laid Concrete Roads. 656 (Oct.); Discussion, 696 (Oct.).
- Little, D. H. Some Designs for Flexible Fenders. 42 (Feb.); Discussion, 82 (Feb); Correspondence, 532 (June); Corrigendum, 549 (June).
- Lockwood, G. O. Sea Defence Work at Silloth, Cumberland. 188 (Feb.).
- McDonald, Alexander. Aerodrome Runway Construction in Nigeria. 170 (Feb.). Maclaren, A. Shaw. The Reconciliation of Civil Engineering Problems with Inter-
- national Standards in the Siting and Planning of Airports. 281 (June); Discussion, 303 (June); Correspondence, 318 (June).
- Maclean, D. J., and P. J. M. Robinson. Methods of Soil Stabilization and their Application to the Construction of Airfield Pavements. 447 (June); Discussion, 487 (June); Correspondence, 819 (Oct.).
- Macmillan, D. H. Echo Sounding in Relation to Modern Harbour and Coastal Surveys (abs. of Lecture). 807 (Oct.).
- Melville, William. Post-war Coast Protection Works at Fleetwood, Lancashire, 1946– 50. 503 (June).
- Miot, Réné. The Reconstruction of French Railways (abs. of film commentary). 710 (Oct.).

- Palmer, E. A. The Organization of Airport Construction. 1 (Feb.); Discussion, 31 (Feb.).
- Ridehalgh, Harry. The Reconstruction of Greenwell's No. 1 Dry Dock and Ancillary Works at Sunderland. 321 (June); Discussion, 341 (June); Correspondence, 359 (June).
- Robinson, P. J. M. See Maclean and Robinson.
- Sadler, R. E. The Design and Equipment of Modern Marshalling Yards. 755 (Oct.); Discussion, 788 (Oct.); Correspondence, 800 (Oct.).
- Smith, R. A. B. Some Aids to Traffic Flow. 416 (June); Discussion, 429 (June).
- Turton, Frank, and N. S. Cox. The Design of Structures in Relation to Maintenance and Inspection. (Part I, "Bridges," by Frank Turton; Part II, "Structures other than Bridges," by N. S. Cox.) 365 (June); Discussion, 393 (June); Correspondence, 816 (Oct.).
- Waters, D. B. The Performance of Some Asphalt and Coated-Macadam Mixing Plant. $145~({\rm Feb.}).$
- Willson, G. J. See Coombs and Willson.
- Wilson, G. A. Port of London Authority Engineering Works, 1952. 551 (Oct.); Discussion, 586 (Oct.).
- Wilson, G. C. See Glossop and Wilson.

INDEX TO CONTRIBUTORS TO DISCUSSIONS

Abeles, Dr P. W., 213 (Feb.). Addison, Prof. Herbert, 599, 649 (Oct.). Alley, G. D. S., 135 (Feb.); 794 (Oct.). Anderson, J. K., 648 (Oct.). Andrew, H. S., 746 (Oct.). Andrews, W. P., 488 (June).

Baker, Prof. A. L. L., 85 (Feb.).
Bennett, Col. G. T., 435 (June); 73 (Oct.).
Berridge, P. S. A., 395 (June).
Bradbeer, B. F. J., 254 (June); 70 (Oct.).
Bridge, E. K., 132 (Feb); 394 (June).
Briggs, R. McC., 355 (June).
Briscoe, John, 314 (June).
Broadbent, H. R., 644 (Oct.).
Broake-Bradley, H. E., 497 (June).
Bryan, B. W., 274 (June).
Bulman, T. N. C., 353 (June).

Campbell, J. I., 788 (Oct.).
Campbell, J. S., 398 (June).
Campbell, J. S., 398 (June).
Campion, F. E., 128 (Feb.).
Cantrell, A. H., 140 (Feb.); 547 (June).
Cardell, J. E., 743 (Oct.).
Cassel, F. L., 264 (June).
Catlow, W. S., 493 (June).
Charlesworth, Dr G., 436 (June).
Clayton, A. J. H., 429 (June); 749 (Oct.).
Cockle, W. P. S., 642 (Oct.).
Colquhoun, J. G., 36 (Feb.).
Colquhoun, B. S., 819 (Oct.).
Coombs, D. H., 650 (Oct.).
Cooper, G. S., 34 (Feb.); 487 (June).
Cox, N. S., 414 (June). See also Turton and Cox.
Craven, C. A. U., 273 (June).
Crowther, G. Cubley, 814 (Oct.).

Dath, F. P., 409 (June). Dawson, J. A., 31 (Feb.). Dobbs, L. A., 36 (Feb.). Drake, James, 741 (Oct.). Duff, J. T., 437 (June). Dunbar, A. R., 791 (Oct.). Duvivier, Jack, 813 (Oct.).

Cuerel, John, 91 (Feb.).

Fairbairn, P. E., 272 (June). Fisher, J. M., 36 (Feb.); 702, 706 (Oct.). Fitt, R. L., 303 (June). Fox, D. A., 274 (June).

Gifford, E. W. H., 215 (Feb.). Ginns, H. N., 433 (June). Glasgow, Lieut.-Col. W. M., 35 (Feb.). Glossop, Rudolph, 586 (Oct.). Glossop, Rudolph, and G. C. Wilson, 268, 278 (June). Golder, Dr H. Q., 258, 494 (June). Green, Col. Sydney, 431 (June); 747 (Oct.). Grigson, R. R. W., 700 (Oct.).

Hajnal-Kónyi, Dr K., 210 (Feb.).
Hammond, R. E. Rolt, 748 (Oct.).
Hargreaves, W. M., 312 (June).
Harvey, R. C., 100 (Feb.); 362 (June).
Henry, M. A., 403 (June).
Hider, R. C., 647 (Oct.).
Hill, J. C., 649 (Oct.).
Hodgson, G. H., 495 (June).
Hughes, Brig. A. C., 705, 749 (Oct.).
Hussell, E. T. T., 438 (June).
Hutton, T. E., 749, 753 (Oct.).

Inglis, J. G. F., 803 (Oct.).

Jakobson, B., 276 (June). Jellett, J. H., 86 (Feb.); 341 (June); 598 (Oct.). Johnson, H. C., 800 (Oct.).

Kelly, Austin, 344 (June). Kerensky, O. A., 410 (June). Kirkham, R. H. H., 696, 706 (Oct.). Kirwan, R. B., 94 (Feb.). Kubale, J. C., 789 (Oct.).

Lambert, Alan P., 34 (Feb.); 697 (Oct.). Lee, Dr A. R., 491 (June). Leeming, J. J., 753 (Oct.). Lewis, E. A., 592 (Oct.). Lewis-Dale, E. H., 311 (June). Little, D. H., 102 (Feb.); 346, 543 (June). Lloyd-Jones, R. F., 308 (June). Loewy, E. I., 351 (June). Lovell, S. M., 740 (Oct.).

McCormick, D. C., 533 (June).
McGarey, D. G., 359 (June).
McGowan, C. W. N., 99 (Feb.); 596 (Oct.).
McIlmoyle, R. L., 795 (Oct.).
Maclaren, A. Shaw, 303, 315, 320 (June).
Maclean, D. J., 256, 497 (June).
Maclean, D. J., and P. J. M. Robinson, 819 (Oct.).
Maconachie, F. S., 346 (June).
Manning, G. P., 441 (June).

Marchand, M., 795 (Oct.). Marwick, Robert, 318 (June). Morgan, E. E., 261 (June). Moss, A., 793 (Oct.).

Ordman, N. N. B., 35, 92 (Feb.).

Palmer, E. A., 37 (Feb.). Palmer, John, 590 (Oct.). Pontin, V. H., 355 (June). Prior, F. J. J., 134 (Feb.).

Ramsay, J. S. S., 354 (June).
Ratter, John, 646 (Oct.).
Ridehalgh, Harry, 82 (Feb.); 356, 363 (June).
Robertson, A. M., 533 (June).
Robinson, A. H., 535 (June).
Robinson, P. J. M., 500 (June).
Robinson, P. R., 100 (Feb.).
Rooke, G. W., 97 (Feb.).
Ross, Prof. A. D., 209 (Feb.).

Sadler, R. E., 798, 804 (Oct.).
Samuel, R. J., 737 (Oct.).
Saurin, B. F., 90 (Feb.).
Scott, P. A., 342 (June); 594 (Oct.).
Shipp, D. G., 790 (Oct.).
Sinclair, T. S., 442 (June).
Skempton, Dr A. W., 265 (June).
Skinner, J. A., 306 (June).
Smith, Harold, 33 (Feb.).

Smith, H. Shirley, 405 (June). Smith, R. A. B., 443 (June). Stephenson, H. W., 539 (June). Stephenson, R. A., 87 (Feb.); 360 (June); 588 (Oct.). Stewart, D. A., 706 (Oct.).

Telford, A. R., 649 (Oct.).
Terris, A. K., 136 (Feb.).
Thomas, S. B., 439 (June).
Thompson, J. Taylor, 129 (Feb.).
Toms, A. H., 139 (Feb.); 259, 407 (June);
649 (Oct.).
Train, J. C. L., 127 (Feb.); 393, 398
(June); 641 (Oct.).
Turton, Frank, 411 (June).
Turton, Frank, and N. S. Cox, 818 (Oct.).

Turton, Frank, 411 (June).
Turton, Frank, and N. S. Cox, 818 (Oct.).
Waddington, H. S., 539 (June).
Walker, Sir Hubert, 36 (Feb.); 315 (June).
Ward, W. H., 278 (June).
Watkins, F. J., 348 (June).
Watson, J. D., 138 (Feb.).
West, J. D., 131 (Feb.); 400 (June).
Wilks, W. T., 545 (June), 816 (Oct.).
Williams, J. A., 532 (June).
Willson, G. J. 654 (Oct.).
Wilson, G. A., 353 (June); 600 (Oct.).
Wilson, G. C., 489 (June); 744 (Oct.).
See also Glossop and Wilson.
Wolfe-Barry, M. L., 350 (June).

SUBJECT INDEX

FOR

Proceedings, Part II, Vol. 2, 1953. February, June, and October, 1953.

Airports:

Construction.—The Organization of Airport Construction, E. A. Palmer. 1 (Feb.); Discussion, 31 (Feb.).

Planning.—The Reconciliation of Civil Engineering Problems with International Standards in the Siting and Planning of Airports, A. Shaw Maclaren. 281 (June); Discussion, 303 (June); Correspondence, 318 (June).

Runways and Pavements.—See Soil Mechanics, Strengthening of Soils.

Nigeria.—Aerodrome Runway Construction in Nigeria, Alexander McDonald. 170 (Feb.).

Coast Works:

Cumberland.—Sea Defence Work at Silloth, Cumberland, G. O. Lockwood. 188 (Feb.).

Kent.—Post-war Protection Works along the South-East Coast of England, which have been Undertaken by the Kent River Board as Part of their Functions in Connexion with Land Drainage, G. Cubley Crowther. 196 (Feb.); Correspondence, 813 (Oct.); Corrigendum, 549 (June).

Lancashire.—Post-war Coast Protection Works at Fleetwood, Lancashire, 1946-50,

William Melville. 503 (June).

Lincolnshire, Norfolk, and Suffolk.—Coast Protection: Some Recent Works on the East Coast, 1942-52, Jack Duvivier. 510 (June).

Docks:

Dry Docks.—The Reconstruction of Greenwell's No. 1 Dry Dock and Ancillary Works at Sunderland, Harry Ridehalgh. 321 (June); Discussion, 341 (June); Correspondence, 359 (June).

Embankments.—See Soil Mechanics, Roads. Erosion.—See Coast Works.

Fenders:

Flexible.—Some Designs for Flexible Fenders, D. H. Little. 42 (Feb.); Discussion, 82 (Feb.); Correspondence, 532 (June); Corrigendum, 549 (June).

Harbours and Ports:

London.—Port of London Authority Engineering Works, 1952, G. A. Wilson. 551 (Oct.); Discussion, 586 (Oct.).

Landslips .- See Soil Mechanics, Roads.

Railways:

Maintenance.—Some Major Problems in Railway Civil Engineering Maintenance, A. H. Cantrell. 106 (Feb.); Discussion, 127 (Feb.); Correspondence, 545 (June). The Design of Structures in Relation to Maintenance and Inspection. (Part I, "Bridges," by Frank Turton; Part II, "Structures other than Bridges," by N. S. Cox.) 365 (June); Discussion, 393 (June); Correspondence, 816 (Oct.).

Marshalling Yards.—The Design and Equipment of Modern Marshalling Yards, R. E.

Sadler. 755 (Oct.); Discussion, 788 (Oct.); Correspondence, 800 (Oct.).

Underground.—The Trend of Development in the Design and Equipment of Underground Railways, D. H. Coombs and G. J. Willson. 605 (Oct.); Discussion, 641 (Oct.).

France.—(Film commentary.) The Reconstruction of French Railways (abs.), Réné Miot. 710 (Oct.).

Roads:

Constructional Plant.—The Performance of Some Asphalt and Coated-Macadam Mixing Plant, D. B. Waters. 145 (Feb.).

Design.—The Design of Motorways, T. E. Hutton. 711 (Oct.); Discussion, 737 (Oct.); Correspondence, 753 (Oct.).

Surfaces.—Factors Affecting the Riding Quality of Machine-Laid Concrete Roads, R. H. H. Kirkham. 656 (Oct.); Discussion, 696 (Oct.).

See also supra, Constructional Plant.

Traffic.—Some Aids to Traffic Flow, R. A. B. Smith. 416 (June); Discussion, 429 (June).

Sea Defence Works.—See Coast Works.

Soil Mechanics:

Roads.—Soil Stability Problems in Road Engineering, Rudolph Glossop and G. C. Wilson. 219 (June); Discussion, 254 (June); Correspondence, 272 (June).

Strengthening of Soils.—Methods of Soil Stabilization and their Application to the Construction of Airfield Pavements, D. J. Maclean and P. J. M. Robinson. 447 (June); Discussion, 487 (June); Correspondence, 819 (Oct.).

Surveying and Levelling:

Marine.—(Lecture.) Echo Sounding in Relation to Modern Harbour and Coastal Surveys (abs.), D. H. Macmillan. 807 (Oct.).

the name of the party of the pa